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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,580	11/30/2001	Yuji Kawano	Q66805	3790

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SUGHRUE, MION, ZINN, MACPEAK & SEAS
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EXAMINER

EASTHOM, KARL D

ART UNIT PAPER NUMBER

2832

DATE MAILED: 12/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	09/996,580	KAWANO ET AL.	
	Examiner	Art Unit	
	Karl D Easthom	2832	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/21/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 2832

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-5 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.
- Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for Fe[sub 0.1]Co[0.9], does not reasonably provide enablement for any of the other forms of NiCoFe as claimed, because applicant's data (Examples 1, 6 and 7) shows only the first noted composition having the claimed element of "wherein said magnetoresistive sensor has a magnitude of magnetic field of equal to or more than 100 Oersteds at a point where an integral of magnetoresistance ratio occupies 90% of a total magnetoresistance ratio in a magnetoresistance curve". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. That is, there is no data to support the element that other compositions of NiCoFe would also have the claimed element. In fact, applicant argues that Kano does not inherently have the claimed limitation, so that it is not seen how applicant's broad claim can have such a limitation. Wang provides evidence that the cobalt rich forms of CoFe have the claimed element of "wherein said magnetoresistive sensor has a magnitude of magnetic field of equal to or more than 100 Oersteds at a point where an integral of magnetoresistance

Art Unit: 2832

ratio occupies 90% of a total magnetoresistance ratio in a magnetoresistance curve”, as noted below.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (IEEE article submitted by app.) or Kano, in view of McGlone or Dahlberg et al. Wang discloses the claimed invention, except the vehicle-mount, at the INTRO section and at Fig. 4 where annealing at 300 degrees C occurs, meeting the storage requirement since ambient is not higher than same. The thickness is met since the bilayer thickness of CoFe/Cu is 37.9A, see remarks following Eq. 1, and with CoFe at 11-25 A at Fig. 4, t_m and t_n are met, where t_n is 37.9A-15 A, for example, or 22 A. The layers are disclosed as cobalt rich at the top of the col. 2, page 1, for the purpose of better magnetic properties and stability, which meets or suggests applicant's claim (when $1-x-y=0$, leaving a cobalt rich $\text{Co}(x \text{ more than } .7)\text{Fe}(\text{less than } .3)$). That is, it would have been obvious to form a cobalt rich layer in the claimed range for the stated purpose of Wang. The element $z=1$ in this example. The limitation of “wherein said magnetoresistive sensor has a magnitude of magnetic field of equal to or more than 100 Oersteds at a point where an integral of magnetoresistance ratio occupies 90% of a total magnetoresistance ratio in a magnetoresistance curve” is met at the top of page 3522 - disclosing the 90 % integral of magnetoresistance ratio as 140Oe. For claim 2, $N=21$ at p. 3521 The buffer

Art Unit: 2832

layer is considered to be the same few angstroms of the magnetic layer, since they are claimed as the same composition. Or, and for claim 3, the NiFeCo buffer layer at page 3521 of 40A is composed of the same materials –CoFe, (even though it also has other materials – Ni) as the CoFe/Cu layers see Fig. 3. For claims 4-5, the heating at 300 C meets the claim for storage in normal ambients. Moreover, the storage temperature is akin to a field of use, so that the device of Wang could be stored at any such temperature, or guaranteed to be stored at same. Similarly, Kano discloses the claimed invention, except the vehicle-mount, at Fig. 9, and at col. 4, lines 20-45, with annealing at 320 degrees C at Example 2, col. 7, meeting the storage requirement since ambient is not higher than same. The range at col. 4, overlaps with applicant's claimed range, suggesting or meeting the ranges where the ranges are not unduly broad. The thickness for t_m is noted as T_a at col. 4, and is preferred to be less than or equal to 20A. Thus, the buffer layer is the first few angstroms, with the remainder greater than 10A. For claim 3, it would have been obvious to make them slightly larger than 10A, where the layers are only preferred, for the purpose of relaxing tight tolerance standards, where 10.1A is not expected to markedly alter the device in any manner. Further, the device is prevented from heat deterioration during use, according to col. 15, lines 15-35, where the device can be operated at any temperature below 320 depending on the use. Or alternatively as to the storage temperature, McGlone discloses storing or using at from 80 degrees to about 250 degrees C, at col. 5, lines 1-10. McGlone discloses using the GMR sensor in a vehicle or many types of applications, including GMR devices having Cu and Co, similar to that of Wang, see col. 9, lines 55-65, and col. 5, lines 45-50. Or, Dahlberg discloses at col. 1 using GMR sensors in vehicles for navigation, where navigation

Art Unit: 2832

systems have been desired in vehicles for over 200 years. It would have been obvious to employ the GMR sensor of Wang or Kano in the vehicles of McGlone or Dahlberg at the desired temperatures where McGlone discloses the desirability of GMR sensors in general for detection and Marx discloses same for navigation, and in particular, all references disclose having Co and Cu for detection in vehicles at certain desired operating temperatures, with a similar GMR sensor of Wang disclosed. The limitation of "wherein said magnetoresistive sensor has a magnitude of magnetic field of equal to or more than 100 Oersteds at a point where an integral of magnetoresistance ratio occupies 90% of a total magnetoresistance ratio in a magnetoresistance curve" is an inherent limitation since the prior art ones certainly will since they have the same materials and structure as applicant's invention. Further, to prove that this is correct, Fig. 3 of Wang shows that lines drawn at 100 Oe for the annealed films embrace an area under the curve that is about 60% of the area, thus meeting the 90% definition by far. For Kano, because the same materials are used as applicant, this is necessarily correct. Finally, applicant shows no data for his comparative examples. If applicant has data showing that those compositions do not meet the claimed limitations, he should provide same since such data may also provide insight the enablement question.

5. Applicant's arguments filed with the RCE on 11/21/03 by way of the incorporated previous AF amendment of 9/23/03 have been fully considered but they are not persuasive. The argument that the saturation field at 90% is not disclosed or inherent is not correct. Wang at the top of page 3522 discloses the field as 140 Oe, as noted above. And for Kano, the same materials must have the same properties. Applicant has the burden of proving otherwise. The buffer layers are addressed above. Essentially, one

Art Unit: 2832

can consider the first few or even 10 A of the magnetic layer to be a buffer for the remaining portion since applicant claims the same materials for the two layers. Naming one portion of the layer one thing and the other another makes no structural distinction.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl Easthom whose telephone number is (703)308-3306.

The examiner can normally be reached on M-Th. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad, can be reached on (703)308-7619. The fax phone number for the organization where this application or proceeding is assigned is (703)308-7722. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


KARL D. EASTHOM
PRIMARY EXAMINER